

## ANGLESEY GEOLOGY.—REPLY TO DR. R. D. ROBERTS.

SIR,—I have just seen, after a prolonged absence from home, Dr. Roberts' paper in your August Number.

I do not know whether it is usually considered fair play to ignore the memoir in which an author has expressed his views with technical accuracy, and to base destructive criticism upon a subsequent paper, written in semi-popular language, in which the topic of the memoir is introduced simply by way of illustration. In an elaborate paper, embodying the results of the work of several years, which was printed in the *Journal of the Geological Society* (May, 1881), I most emphatically insisted that the altered rocks of Northern Anglesey were on the whole *not* metamorphic, but *hypometamorphic*. Surely Dr. Roberts must have seen this memoir. If he had not, he was not qualified to express an opinion upon my views; if he had, he was not justified in misrepresenting them.

My papers on "How to work in the Archæan Rocks," which appeared in this *MAGAZINE*, were written for students rather than for teachers, and the terms employed were sometimes used in a general, rather than a strictly technical, sense. Thus I avoided the term "hypometamorphic" as a refinement unnecessary for my purpose; and spoke of "metamorphic" as generally equivalent to "altered." A critic should have selected the scientific, not the popular, exposition of his author's views.

Archæan geologists will eagerly look for the evidence upon which Dr. Roberts affirms that a "passage" occurs between the black shales and the "altered Cambrian," my Pebidian, of Northern Anglesey. I have hammered over almost every patch of "metamorphic" rock in Great Britain, and have seen something of the older formations in Ireland and North America. I have studied hundreds of sections where eminent authorities had declared that a "passage" existed between unaltered strata and areas of regional metamorphism; but I cannot recall a single instance in which I was not able to resolve the "passage" into a faulted junction, or something equally inconsistent. In Northern Anglesey, the Pebidian is sometimes, especially near its junction on the south with the black shales, more highly altered than usual, and in places is truly metamorphic (chlorite-schist); so that proof of a true passage would be of great theoretical importance. When Dr. Roberts publishes this discovery, I trust he will furnish such evidence, microscopic and stratigraphical, as will remove the doubt which must necessarily attach to the mere statement that a passage exists.

Dr. Roberts does not think that the occurrence of included fragments of the "gnarled series" (which?) in the Cambrian would place him in a dilemma. In my simplicity, I thought that if B contained pebbles derived from A, A must be the older group. Dr. Roberts, however, has certain "hypotheses" on hand to help him out of his dilemma, though he candidly admits that they are not yet "working." I should think not.

C. CALLAWAY.

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